

**ARI Contractor Report 96-77**

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**Final CTC Archive Status Report: Operations and  
Maintenance Support for the CTC Archive**

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BDM Federal, Inc.**

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**FINAL CTC ARCHIVE STATUS REPORT:  
OPERATIONS AND MAINTENANCE SUPPORT FOR THE CTC ARCHIVE**

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March 15, 1994

U. S. Army Research Institute

**FINAL CTC ARCHIVE STATUS REPORT:  
OPERATIONS AND MAINTENANCE SUPPORT FOR THE CTC ARCHIVE**

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**FINAL CTC ARCHIVE STATUS REPORT:  
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**I. BACKGROUND**

Army Regulation 11-33 states, "The DCSPER will ensure that the Army Research Institute (ARI) develops a training data archive of all unit performance data derived from training conducted at the combat training centers." The Presidio of Monterey Field Unit of ARI (ARI-PM) has been assigned the responsibility of operating and maintaining the Combat Training Center (CTC) Archive. The CTC Archive currently maintains operational databases for the National Training Center (NTC), the Joint Readiness Training Center (JRTC), and the Combat Maneuver Training Center (CMTC). In addition, Battle Command Training Program (BCTP) data will be incorporated into the CTC Archive in the near future.

Active, Reserve, and National Guard units deploy to the training centers periodically to train in the most realistic conditions short of actual combat. Following each training cycle or rotation, data concerning the training units and their missions are sent to ARI-PM for inclusion into the Archive databases. The Archive data are available to analysts and researchers from the Department of Defense for identifying and analyzing issues related to Doctrine, Organization, Training, Materiel, Leadership and Soldiering (DOTMLS). In addition, ARI and the Center for Army Lessons Learned (CALL) utilize the Archive and the Analysis Facility to conduct CTC Data Analysis Certification Workshops for Department of Defense Agencies, TRADOC schools and integrating centers. These agencies, schools, and centers use the data to analyze performance trends and to evaluate specific DOTMLS issues.

**II. OBJECTIVE**

The primary purpose of this report is to provide a status of the data that are contained in the CTC Archive as of 11 January 1994. This status report will cover both the physical data sources and the digitized databases. In addition, this report will include an Archive Project Summary, the Priorities of Work for FY 94, and a listing of Areas of Concern that impact upon Archive operations and CTC data analysis.

### **III. PROJECT SUMMARY**

The Archive project provides for the continuing operation, maintenance and support of the Archive Facility, the physical data materials, and the digital databases. The scope of the Archive effort includes two major areas:

- Management of the CTC Archive Data Materials
- Provision of ADP support for the Archive databases

Management of the CTC Archive Data Materials. The management of the CTC Archive data materials involves processing the physical materials (documents, tapes, etc) that arrive from the CTCs so that they are properly maintained for ready access. It also involves extracting information from these physical items and entering that information into various electronic databases.

Provision of ADP Support for the Archive Databases. Data arrives from the CTCs in a variety of formats. There is a need to provide specialized programming services to facilitate the extraction of data from the original sources and the entry of this data into the databases that will be used by researchers. ADP support also includes the installation and maintenance of hardware and commercial off-the-shelf software that enable analysts to access and manipulate the data. The Archive hardware and software provide for a local area network (LAN) and remote access to the databases.

### **IV. ARCHIVE STATUS REPORT, JANUARY 1994**

The Archive Status Report provides an end-of-contract status of the data that are contained in the CTC Archive. This status "snapshot" covers both the physical data sources and the digitized databases. The status report begins with a list and general description of the data sources held in the Archive. Following the list of data sources is a listing of the Archive databases. The Archive Status Report culminates with a detailed status of the Archive data sources and databases.

#### **ARCHIVE DATA SOURCES**

After Action Review (AAR) videotapes  
Communications tapes

- Digital Data
- Film
- Graphics
- Orders/Plans
- Scenario Documents
- Take Home Package (THP)
- Other Supporting Documents

**AAR videocassettes**, received from all CTCs, document After Action Reviews at all echelons including Division (limited), Brigade, Battalion, Company, and Platoon. These tapes are currently sent to the Archive in 1/2 inch, VHS format only, though the Archive does hold 3/4 inch AAR videocassettes for NTC rotations prior to 92-04.

**Communications audio tapes** are received from CMTC and NTC only. These are one inch, open reel, 40-track tapes containing radio communications among the player units during a given time period.

**Digital Data** includes any and all digital files received by the Archive. These include: NTC instrumented data tapes, NTC and JRTC diskette version of their THPs, and JRTC training and evaluation outline (T&EO) diskettes and video listings. Other digital information exists, such as AAR tape inventory lists and early NTC orders and plans, but these are not used for database creation.

**Film**, 35mm slides specifically, is occasionally received from CMTC only. These slides usually document camouflage of personnel or equipment, safety violations, etc. at the CTCs and are not currently used in database products.

**Graphics** include battlefield graphics created and employed by player units. Also included are a number of instrumented graphics. These are received from all CTCs, though JRTC does not often send the large, acetate overlays. CMTC sends a reduced paper version (included with the THP) along with full-size acetate graphics.

**Orders and Plans** are held for all CTCs, for both BLUEFOR and OPFOR player units, when furnished. Corps, Brigade, and Battalion/TF level operations orders and plans are held for all CTCs. CMTC sends Orders and Plans as part of an integrated THP. NTC and JRTC Orders and Plans are held in the Archive with other rotational paper data.

**Scenario documents** are those defining the notional enemy, the Civil Affairs situation, etc. These are received for every rotation, even in cases where the document remains unchanged over a series of rotations. Such supportive documents are received from all CTCs, JRTC sending much more than either NTC or CMTC.

**THP** is the narrative summary of unit performance by BOS, echelon, and mission. In addition, it contains some Battle Damage Assessment data broken down by mission, and subelement. The CTC Archive receives a copy of this document for each rotation and from each CTC. Diskette versions are received from JRTC and NTC (see Digital Data above).

**Other Supporting Documentation** may include Signal Operating Instructions (SOIs) for use with Communications tapes, Staff Duty Journals/Logs, and Artillery firing data documents, to name a few. Some of these document types are sent to the Archive from each of the CTCs. More often, such documents are unique to the issuing CTC. Even in cases where the information is similar, its presentation and format are often unique to the CTC that sent it.

#### **ARCHIVE DATABASES**

Data sources are used in the building of Archive databases. These databases facilitate remote and local access and manipulation of CTC training data for the benefit of researchers and analysts. The data processing necessary to fill databases requires an intensive and extensive re-working of data sources, both through the hands of subject matter experts (SMEs) and data entry personnel and by computerized processes. The databases, accessible through the Combat Analyst Workstation both on and off site, include:

- Training and Research Automated Catalog System (TRACS)
- Mission Database
- Mission Replay and Battle Trace
- Mission Critical Event Sheets (MCES)
- Mission Training Plan (MTP) Database
- Take Home Package (THP) Database
- Battle Damage Assessment (BDA) Database
- Graphics Database

**TRACS** is central to the family of Archive databases. TRACS, resident on the VAX, allows researchers to select missions of interest based on a variety of criteria. Once a mission has been selected, data sources specific to that mission (and housed in the Archive for examination by researchers) will be listed in TRACS. Basic mission information -- mission statement, BDA, and the like -- is also available in TRACS. CALL has directed that TRACS be renamed as the Automated Catalog System (ACS).

**Mission Databases** reside on the VAX and provide player position location, player status, and firing data for each NTC mission for which readable digital data files are received.

**Mission Replay files**, stored on UNIX servers, allow the analyst to replay selected NTC missions in two different modes: **Battle Trace (TBAT)** and Performance Analysis Replay Tool (PART). TBAT allows the analyst to quickly review mission battle-flow with terrain features. PART provide a fixed-scale, high-resolution replay with terrain, choice of displayed vehicles, and displays player attrition, engagements, and indirect fire missions.

**MTP database**, resident on the VAX, is composed of T&EO documentation files and Unit Performance Data files (UPD) from JRTC, to which the database is specific. Both sets of files are necessary for MTP database creation. It is useful in accessing JRTC T&EOs over many rotations.

**MCES** provide basic information, such as Mission Statements and Terrain, and display graphically the Battle Flow of Events as a time-line. Currently, these files are made available in hard-copy. To create an MCE sheet, data entry personnel and subject matter experts identify critical events in the THP, AAR, and unit operations order for a given mission.

**THP** database files support automated access to NTC and JRTC THP textual data. The database expedites text selection by CTC, rotation, organization type, BOS, and specific section. It also includes the ability to search a word or phrase within a file.

**BDA** database files hold CTC battle statistics on a mission by mission basis. The database is useful in searching battle statistics over many rotations, and allows for flexible manipulation and importation into spreadsheets or Xbase software applications.

**Graphics Database** files consist of imaged battlefield graphics. The original images are reduced (when necessary), scanned, and converted before being uploaded to the UNIX server where they reside. Graphics files may be viewed and manipulated through the WinGIF shareware application found on the Combat Analyst Workstation. WinGif also allows for easy conversion of graphics files into a WordPerfect compatible file format. A researcher may then quite easily complement his report with battlefield graphics.

## **STATUS OF ARCHIVE DATA SOURCES AND DATABASES**

### **Status of Archive Data Source**

#### **After Action Review Videocassettes:**

NTC	90-01 through 90-11, 90-13 91-02, 91-05 through 91-08, 91-10 through 91-12 92-01 through 92-12 93-01 through 93-12 94-01, 94-02
CMTC	90-01 through 90-12 91-01 through 91-10 92-01 through 92-06, 92-08 through 92-12 93-01 through 93-12 94-01, 94-02
JRTC	90-01 through 90-08 91-01 through 91-09 92-01 through 92-09 93-01 through 93-03

#### **Communications Audio Tapes:**

NTC	90-01 through 90-11, 90-13 91-02, 91-05, 91-06, 91-08, 91-10 through 91-12 92-01 through 92-12 93-01 through 93-12 94-02
CMTC	90-03 through 90-13 91-01 through 91-10 92-01, 92-02 93-02 through 93-09
JRTC	does not send communications tapes to the Archive.

**Digital Data:**

NTC       sends instrumented data and Take Home Package files to the CTC Archive  
90-01 through 90-11, 90-13  
91-02, 91-05 through 91-08, 91-10 through 91-12  
92-01 through 92-12  
93-01 through 93-12  
94-01

CMTC      does not send digital files to the CTC Archive.

JRTC      digital files consist of THP, T&EO documentation files and Unit Performance Data (UPD), BDA, and I-MILES data (for early rotations only).

THP       90-01 through 90-06, 90-08  
91-01, 91-03 through 91-08  
92-04 through 92-09  
93-01 through 93-06, 93-08

T&EO documentation files  
90-01 through 90-08  
91-01 through 91-09  
92-01 through 92-09  
93-02 through 93-06, 93-08  
94-01

T&EO UPD files  
90-01 through 90-08  
91-01 through 91-09  
92-01 through 92-09  
93-02 through 93-06, 93-08  
94-01

BDA       90-01 through 90-08  
91-01 through 91-09  
92-01 through 92-09  
93-02 through 93-08  
94-01

I-MILES    90-02 through 90-04, 90-06, 91-01

**Film:** Film in the form of slides (35mm transparencies) is held at the Archive in limited quantities.

NTC        does not send film to the Archive.

JRTC        does not send film to the Archive.

CMTC        92-03, 92-04

**Graphics:** Graphics are held at the Archive for all CTCs, CMTC and NTC providing the bulk of the graphics. Note that a number of other graphics may or may not be available for rotations listed below.

NTC        90-01 through 90-11, 90-13  
              91-02, 91-05 through 91-08, 91-10 through 91-12  
              92-01 through 92-12  
              93-01 through 93-12  
              94 - 01 through 94-03

CMTC        90-01through 90-12  
              91-01 through 91-10  
              92-01 through 92-06, 92-08 through 92-13  
              93-01, 93-02

JRTC        90-03 through 90-07  
              91-01 through 91-04, 91-06 through 91-08  
              92-01 through 92-09  
              93-02 through 93-04

**Orders and Plans:** Records indicate receipt of orders and plans by rotation -- not mission. No mention of quality is noted for these items. Therefore, receipt of a rotation's worth of orders in no way determines availability of orders and plans for use in the graphics database or for use in mission-based research.

NTC        90-01through 90-11, 90-13  
              91-02, 91-05 through 91-08, 91-10 through 91-12  
              92-01 through 92-12  
              93-01 through 93-12  
              94-01 through 94-03

CMTC	90-01 through 90-12 91-01 through 91-10 92-01 through 92-06, 92-08 through 92-13 93-01, 93-02
JRTC	90-01 through 90-08 91-01 through 91-09 92-01 through 92-09 93-01 through 93-04

**Scenario:** Scenario development documents are those paper data defining the notional situation (civilian, geographic, political issues and the like) of the rotation on a macro level. These are in large part supplied by the host CTC.

NTC	sends scenario documents only sporadically. For purposes of reporting, the Archive does not hold scenario control documents from NTC.
CMTC	sends few if any scenario documents. For purposes of reporting, the Archive does not receive scenario control documents from CMTC.
JRTC	sends the bulk of scenario control documents, often well in advance of a rotation's completion. Much of this information exactly duplicates scenario documents from the previous rotation(s).  90-01 through 90-08 91-01 through 91-09 92-01 through 92-09 93-01 through 93-08 94-01 through 94-08

**THPs** are held for all CTCs, although the content and format vary greatly by CTC and by fiscal year within each CTC.

NTC	90-01 through 90-11, 90-13 91-02, 91-05 through 91-08, 91-10 through 91-12 92-01 through 92-12 93-01 through 93-12 94-01
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CMTC	90-01 through 90-12 91-01 through 91-10 92-01 through 92-06, 90-08 through 92-13 93-01 through 93-12 94-01, 94-02
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JRTC	90-01 through 90-08 91-01 through 91-09 92-01 through 92-09 93-06 through 93-08 94-01
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**Other Supporting Documentation:** All CTCs send a variety of documents to the Archive that do not meet the definition of orders or scenario control documents. These may include administrative documents like rotation/mission schedules, or they may include operational documents such as SOIs. These often prove useful to archive staff and researchers. An exhaustive record is not available, thus no rotation based account can be effectively provided here.

#### STATUS OF DATABASES

TRACS status is presented by percentage of completion in phases. Each CTC processing sequence is divided into phases. NTC and CMTC are each broken down into four phases, and JRTC into three phases.

The phase descriptions for NTC and CMTC are as follows:

**Phase 1** of TRACS data entry consists of Basic Mission Summary Information. This includes the identification, verification, and data entry of player unit data, and the missions each unit performed at the NTC or CMTC. Building of the master table in TRACS makes the data pertaining to each rotation's missions accessible to the researcher. The tables which make up this phase include, in addition, the rotation table and mission table.

**Phase 2** is made up of Advanced Mission Summary data. This includes the identification of the terrain on which the battle was fought, and the assigned mission performance index. In addition, for NTC, the mission segment information for those missions with digital mission databases is entered in this phase.

**Phase 3** consists of Mission Text files. These include the Mission Statement, and Commander's Intent/Concept (when present), and, for missions from rotation 93-01

forward, the task organization (when provided in data package). Finally this phase includes the Battle Damage Assessment Data, when provided.

**Phase 4** is the final phase of TRACS data entry. It is entitled Mission Catalog information. The tables making up this phase are: the After Action Review (AAR) Videocassette Table, the Communications Tape Table, the Database table, and the Other Data Sources Table. These four tables document the Archive's holdings of physical and digital data pertaining to each mission in TRACS.

The phase descriptions for JRTC are slightly different, owing to the composition of the data sets, and the slightly different structure of JRTC TRACS. They are as follows:

**Phase 1** contains all Mission Summary Information. For JRTC missions, this includes the identification, verification, and data entry of player unit data, and the missions each unit performed at the CTC. Building of the master table in TRACS makes the data pertaining to each rotation's missions accessible to the researcher. The tables which make up this phase include, in addition, the rotation table, mission table, and the meteorological and light data tables.

**Phase 2** is made up of all Mission Text files. These include the Mission Statement, and Commander's Intent/Concept (when present), and, for missions from rotation 93-01 forward, the task organization (when provided in data package). Finally this phase includes the Battle Damage Assessment Data, when provided.

**Phase 3** for JRTC is the final phase of TRACS data entry. It is entitled Mission Catalog information. The tables making up this phase are: the After Action Review (AAR) Videocassette Table, the Database table, and the Other Data Sources Table. These three tables document the Archive's holdings of physical and digital data pertaining to each mission in JRTC TRACS.

Statistics of TRACS fill are given on the following pages.

**TABLE 1: NTC TRACS STATUS****JANUARY 11, 1994**

Rotation	PHASES (given in percentage of completion)				Total
	1	2	3	4	
90-01	100%	94%	94%	100%	97.00%
90-02	100%	100%	56%	100%	89.00%
90-03	100%	100%	56%	100%	89.00%
90-04	100%	100%	31%	100%	82.75%
90-05	92%	100%	31%	67%	72.50%
90-06	85%	100%	56%	100%	85.25%
90-07	100%	100%	54%	92%	86.50%
90-08	100%	100%	29%	50%	69.75%
90-09	89%	50%	63%	72%	68.50%
90-10	100%	100%	67%	100%	91.75%
90-11	100%	50%	19%	100%	67.25%
90-13	100%	93%	47%	100%	85.00%
91-02	100%	88%	39%	64%	72.75%
*91-05	100%	0%	35%	17%	38.00%
**91-06	100%	0%	34%	20%	38.50%
****91-07	%	%	%	%	%0.00
*****91-08	100%	0%	48%	50%	49.50%
91-10	100%	70%	71%	50%	72.75%
91-11					0.00
91-12	100%	86%	50%	72%	77.00%
92-01	100%	72%	98%	60%	82.50%
92-02	81%	91%	70%	12%	63.50%
92-03	97%	88%	68%	12%	66.25%
92-04	82%	50%	75%	43%	62.50%
92-05	80%	87%	75%	71%	78.25%
92-06	96%	87%	70%	24%	69.25%
92-07	94%	100%	46%	68%	77.00%
92-08	100%	91%	45%	79%	78.75%

**TABLE 1: NTC TRACS STATUS****JANUARY 11, 1994**

Rotation	PHASES (given in percentage of completion)				Total
	1	2	3	4	
92-09	92%	70%	93%	56%	77.75%
92-10	84%	65%	65%	65%	69.75%
92-11	92%	70%	92%	55%	77.25%
92-12	92%	68%	70%	50%	70.00%
93-01	100%	86%	25%	22%	58.25%
93-02	92%	65%	25%	6%	47.00%
93-03	92%	71%	70%	5%	59.50%
93-04	94%	63%	100%	0%	64.25%
93-05	92%	74%	90%	0%	64.00%
93-06	100%	90%	100%	0%	72.50%
93-07	92%	78%	95%	7%	68.00%
93-08	92%	21%	25%	7%	36.25%
93-09	100%	36%	25%	5%	41.50%
93-10	100%	43%	100%	7%	62.50%
93-11	92%	41%	25%	6%	41.00%
93-12	100%	31%	25%	7%	40.75%

\* 91-48, National Guard Rotation

\*\* 91-155, National Guard Rotation

\*\*\* 91-40, National Guard Rotation

\*\*\*\* 91-XX, 7th Inf Div (Light) Rotation

**TABLE 1: NTC TRACS STATUS (CONTINUED)****JANUARY 11, 1994**

**TABLE 2: CMTC TRACS STATUS TABLE**  
**JANUARY 11, 1994**

ROTATION	PHASE 1	PHASE 2	PHASE 3	PHASE 4	TOTAL
0-01	100%	85%	75%	94%	89%
90-02	100%	75%	75%	100%	88%
90-03	100%	100%	50%	100%	88%
90-04	100%	95%	50%	90%	84%
90-05	100%	100%	50%	100%	88%
90-06	100%	100%	47%	100%	87%
90-07	100%	100%	50%	100%	88%
90-08	100%	97%	50%	100%	87%
90-09	100%	100%	50%	100%	88%
90-10	100%	100%	50%	100%	88%
90-11	100%	100%	73%	100%	93%
90-12	100%	100%	50%	100%	88%
91-01	100%	96%	25%	100%	80%
91-02	100%	100%	25%	100%	81%
91-03	100%	97%	20%	73%	73%
91-04	100%	100%	25%	100%	81%
91-05	100%	100%	25%	100%	81%
91-06	100%	89%	25%	100%	79%
91-07	100%	100%	25%	89%	79%
91-08	100%	88%	25%	100%	78%
91-09	100%	93%	0%	100%	73%
91-10	100%	100%	0%	100%	75%
92-01	100%	93%	0%	43%	59%
92-02	0%	0%	0%	0%	0%
92-03	100%	100%	0%	100%	75%
92-04	100%	25%	0%	25%	38%
92-05	100%	100%	25%	58%	71%
92-06	100%	75%	19%	85%	70%
92-08	75%	95%	97%	25%	73%
92-09	75%	100%	100%	0%	69%
92-10	75%	58%	33%	0%	42%
92-11	100%	50%	100%	0%	63%
92-12	100%	100%	100%	0%	75%

**TABLE 2: CMTC TRACS STATUS TABLE  
JANUARY 11, 1994**

ROTATION	PHASE 1	PHASE 2	PHASE 3	PHASE 4	TOTAL
92-13	100%	100%	85%	11%	74%
93-01	100%	50%	25%	0%	44%
93-02	100%	50%	75%	0%	6%
93-03	100%	100%	100%	0%	75%
93-04	100%	90%	90%	0%	70%
93-05	100%	77%	0%	0%	44%
93-12	0%	0%	0%	0%	0%

**TABLE 2: CMTC TRACS STATUS TABLE (CONTINUED)  
JANUARY 11, 1994**

**TABLE 3: JRTC TRACS STATUS****JANUARY 11, 1994**

Rotation	Phase 1	Phase 2	Phase 3	Total
90-01	100%	100%	50%	83%
90-02	100%	100%	50%	83%
90-03	100%	100%	50%	83%
90-04	100%	100%	50%	83%
90-05	100%	100%	50%	83%
90-06	100%	100%	50%	83%
90-07	100%	88%	50%	79%
90-08	100%	100%	50%	83%
91-01	100%	67%	50%	72%
91-02	100%	100%	50%	83%
91-03	100%	100%	25%	75%
91-04	100%	100%	25%	75%
91-05	100%	100%	25%	75%
91-06	100%	100%	25%	75%
91-07	100%	88%	25%	71%
91-08	100%	84%	0%	61%
91-09	100%	84%	25%	70%
92-01	100%	100%	25%	75%
92-02	100%	100%	25%	75%
92-03	100%	100%	25%	75%
92-04	100%	100%	50%	83%
92-05	100%	100%	45%	82%
92-06	100%	84%	0%	61%
92-07	75%	83%	0%	53%
92-08	75%	100%	0%	58%
92-09	75%	80%	0%	52%
93-02	75%	87%	0%	54%
93-03	75%	63%	0%	46%

**TABLE 3: JRTC TRACS STATUS****JANUARY 11, 1994**

Rotation	Phase 1	Phase 2	Phase 3	Total
93-04	72%	67%	0%	46%
93-05	0%	0%	0%	0%
93-06	0%	0%	0%	0%
93-07	0%	0%	0%	0%
93-08	0%	0%	0%	0%

**TABLE 3: JRTC TRACS STATUS (CONTINUED)****JANUARY 11, 1994****Mission Database:**

NTC            90-01 through 90-06, 90-09  
               92-01, 92-03, 92-06 through 92-12  
               93-01 through 93-12

CMTC           does not have mission databases due to lack of compliant data files.

JRTC           does not have mission databases due to lack of compliant data files.

**Mission Replay and Battle Trace:**

Mission Replay and Battle Trace apply to NTC only, as they are produced from Mission Database information.

NTC Mission Replays/Battle Traces are available for earlier rotations in addition to those listed below, though listing files prior to 90-01 is outside the scope of work for this contract.

90-01 through 90-06, 90-09  
               92-01, 92-03, 92-06 through 92-12  
               93-01 through 93-12

**Mission Critical Event Sheets (MCES)** may be created for all CTC missions, providing data is available. Mission Critical Event information is not gathered for Live Fire missions.

NTC           90-01 through 90-11

CMTC            90-01  
                92-01, 92-03 through 92-06

JRTC            90-01 through 90-08  
                92-01, 92-02

**THP Database:** Only NTC and JRTC send readable files to the Archive.

NTC            90-01 through 90-11, 90-13  
                91-02, 91-10 through 91-12  
                92-01 through 92-06, 92-11, 92-12  
                93-01, 93-04 through 93-07, 93-10 through 93-12

CMTC            does not provide digital files of THPs.

JRTC            90-01 through 90-06, 90-08  
                91-01, 91-03 through 91-08  
                92-04 through 92-09  
                93-01, 93-06, 93-08

**MTP database:** This database is exclusive to JRTC.

JRTC            90-01 through 90-08  
                91-01 through 91-08  
                92-01, 92-06 through 92-09  
                93-02 through 93-04

**BDA database:**

NTC            90-01 through 90-11, 90-13  
                91-02, 91-10, 91-12  
                92-01 through 92-12  
                93-01 through 93-12

CMTC            90-01 through 90-12  
                91-01 through 91-10  
                92-01, 92-03 through 92-06, 92-08 through 92-13  
                93-01 through 93-05

JRTC            90-01, 90-02, 90-04 through 90-08

91-01 through 91-09  
92-01 through 92-09  
93-02 through 94-04

**Graphics Database:** Five types of data are scanned into the graphics database; Task Force Operations Orders (OPORDs), Task Force Execution Matrix, Task Force Operations Overlays, Mission Critical Event Sheets (MCES), and Firing Intensity Profiles (NTC only). These five data types fall into two groups; unit generated data and archive generated data. Unit generated data consist of the OPORDs, Execution Matrix, and Task Force Operations Overlays. Archive generated data consist of the MCES and Firing Intensity Profiles. Unit generated data can only be scanned if available and if the raw data will produce quality images. The status of the graphics database is shown on the following pages.

**TABLE 4: NTC GRAPHICS DATABASE STATUS**  
**JANUARY 11, 1994**

Rotation	UNIT GENERATED DATA									ARCHIVE GENERATED DATA	
	TASK FORCE OPERATIONS ORDER			TASK FORCE EXECUTION MATRIX			TASK FORCE OPERATIONS OVERLAY			MCES	FIRING INTENSITY PROFILE
	A	U	S	A	U	S	A	U	S		
90-01	9	9	9	7	7	7	8	8	8		
90-02	0	0	0	2	2	2	9	9	9		
90-03	1	1	1	0	0	0	6	6	6		
90-04	0	0	0	1	1	1	10	10	10		
90-05	0	0	0	1	1	1	10	10	10		
90-06	6	5	5	6	6	6	0	0	0		
90-07	6	6	6	9	9	9	6	6	6		
90-08	2	2	2	5	5	5	9	9	9		
90-09	2	2	2	4	4	4	15	15	15		
90-10	0	0	0	1	1	1	9	9	9		
90-11	8	8	8	7	7	7	8	8	8		
90-13	1	1	1	5	5	5	0	0	0		
91-02	7	7	7	5	5	5	6	6	6		
*91-05	13	13		10	10		0	0			
*91-06	7	7		2	1		3	3			
*91-07	0			0			0				
*91-08	1	0		1	0		0				
91-10	9	5	5	9	5	5	2	2	2		
*91-11	1	1		1	1		0				
91-12	7	7	7	5	5	5	5	5	5		
92-01	9	9	9	8	8	8	4	4	4		
92-02	7	7	7	4	4	4	3	2	2		
92-03	4	4	4	3	3	3	2	2	2		
92-04	6	6	6	3	3	3	2	2	2		
92-05	3	1	1	2	1	1	0	0	0		
92-06	6	4	4	5	3	3	4	4	4		
92-07	8	8	8	6	6	6	2	2	2		
92-08	9	8	8	8	7	7	3	3	3		
92-09	7	5	5	3	3	3	6	6	6		
92-10	9	8	8	5	5	5	5	5	5		
92-11	11	8	8	5	4	4	3	3	3		
92-12	11	8	8	9	6	6	15	15	15		
93-01	9	9	9	7	7	7	8	8	8		
93-02	7	5	5	3	1	1	9	9	9		

	UNIT GENERATED DATA									ARCHIVE GENERATED DATA	
	TASK FORCE OPERATIONS ORDER			TASK FORCE EXECUTION MATRIX			TASK FORCE OPERATIONS OVERLAY			MCES	FIRING INTENSITY PROFILE
Rotation	A	U	S	A	U	S	A	U	S		
93-03	9	8	8	2	2	2	14	14	14		
93-04	7	6	6	8	7	7	10	10	10		
93-05	3	3	3	3	2	2	13	13	13		
93-06	7	5	5	7	4	4	10	10	10		
93-07	8	2	2	8	2	2	13	13	13		
93-08	7	7	7	5	5	5	12	11	11		
93-09	6	3	3	6	3	3	6	6	6		
93-10	8	7	7	8	7	7	6	5	5		
93-11	9	5	5	7	3	3	4	3	3		
93-12	10	10	10	10	10	10	10	10	10		

\*Special Rotations: 91-05 through 91-08 National Guard Rotations; no data for 91-11.

**TABLE 4: NTC GRAPHICS DATABASE STATUS (CONTINUED)**  
**JANUARY 11, 1994**

**TABLE 5: CMTC GRAPHICS DATABASE STATUS**  
**JANUARY 1, 1994**

	UNIT GENERATED DATA									ARCHIVE GENERATED DATA	
	TASK FORCE OPERATIONS ORDER			TASK FORCE EXECUTION MATRIX			TASK FORCE OPERATIONS OVERLAY			MCES	FIRING INTENSITY PROFILE
Rotation	A	U	S	A	U	S	A	U	S		
90-01	16	7	7	17	6	6	16	14	14		
90-02	11	5	5	11	5	5	10	10	10		
90-03	11	6	6	13	6	6	10	7	7		
90-04	9	2	2	8	3	3	8	6	6		
90-05	12	8	8	7	4	4	9	9	9		
90-06	9	5	5	6	3	3	9	9	9		
90-07	10	10	10	4	3	3	8	5	5		
90-08	16	12	12	15	11	11	16	16	16		
90-09	5	2	2	4	2	2	8	8	8		
90-10	15	9	9	10	7	7	7	7	7		
90-11	12	5	5	9	6	6	11	11	11		
90-12	10	6	6	5	4	4	7	5	5		
91-01	10	10	10	8	8	8	9	9	9		
91-02	11	11	11	11	11	11	12	12	12		
91-03	1	1	1	2	2	2	2	2	2		

Rotation	UNIT GENERATED DATA									ARCHIVE GENERATED DATA	
	TASK FORCE OPERATIONS ORDER			TASK FORCE EXECUTION MATRIX			TASK FORCE OPERATIONS OVERLAY			MCES	FIRING INTENSITY PROFILE
	A	U	S	A	U	S	A	U	S		
91-04	14	14	14	13	13	13	10	10	10		
91-05	13	13	13	13	13	13	12	12	12		
91-06	7	7	7	6	6	6	8	8	8		
91-07	18	18	18	13	13	13	17	17	17		
91-08	2	2	2	2	2	2	2	2	2		
91-09	4	4	4	6	6	6	6	6	6		
91-10	2	2	2	2	2	2	2	2	2		
92-01	5	5	5	3	3	3	6	6	6		
*92-02											
92-03	5	5	5	5	5	5	5	5	5		
92-04	3	3	3	3	3	3	3	3	3		
92-05	3	3	3	3	3	3	3	3	3		
92-06	15	15	15	12	9	9	15	15	15		
92-08	9	2	2	6	2	2	9	9	9		
92-09	3	2	2	2	2	2	3	2	2		
92-10	5	5	5	3	3	3	6	6	6		
92-11	6	4	4	2	0	0	5	5	5		
92-12	5	2	2	6	2	2	4	3	3		
92-13	8	5	5	6	5	5	8	8	8		
93-01	4	1	1	2	2	2	4	4	4		
92-11	8	8	8	7	7	7	10	10	10		

A = AVAILABLE

U = USABLE

S = SCANNED

**TABLE 5: CMTC GRAPHICS DATABASE STATUS (CONTINUED)**  
**JANUARY 1, 1994**

**TABLE 6: JRTC GRAPHICS DATABASE STATUS: JANUARY 11, 1994**

Rotation	UNIT GENERATED DATA									ARCHIVE GENERATED DATA	
	TASK FORCE OPERATIONS ORDER			TASK FORCE EXECUTION MATRIX			TASK FORCE OPERATIONS OVERLAY			MCES	FIRING INTENSITY PROFILE
	A	U	S	A	U	S	A	U	S		
90-01	No	Data									
90-02	No	Data									
90-03	3	3	3	1	1	1	2	2	2		
90-04	2	2	2	1	1	1	0	0	0		
90-05	2	0	0	0	0	0	1	1	1		
90-06	2	2	2	0	0	0	1	1	1		
90-07	2	2	2	0	0	0	1	1	1		
90-08	No	Data									
91-01	3	3	3	3	3	3	2	2	2		
91-02	1	1	1	0	0	0	0	0	0		
91-03	2	2	2	2	2	2	2	2	2		
91-04	2	2	2	0	0	0	2	2	2		
91-05	No	Data									
91-06	No	Data									
91-07	3	3	3	3	3	3	2	2	2		
91-08	1	1	1	2	2	2	1	1	1		
91-09	1	1	1	1	1	1	0	0	0		
92-01	1	1	1	1	1	1	0	0	0		
92-02	1	1	1	1	1	1	0	0	0		
92-03	1	1	1	1	1	1	1	1	1		
92-04	2	2	2	0	0	0	1	1	1		
92-05	2	2	2	1	1	1	1	1	1		
92-06	2	2	2	0	0	0	2	2	2		
92-07	5	5	5	1	1	1	3	3	3		
92-08	3	3	3	1	1	1	3	3	3		
92-09	5	5	5	2	2	2	3	3	3		
93-02	5	5	5	4	4	4	3	3	3		
93-03	3	3	3	1	1	1	1	1	1		
93-04	6	6	6	1	1	1	5	5	5		

A = AVAILABLE

U = USABLE

S = SCANNED

This concludes the Archive Status Report, January 1994. For more detailed information regarding data sources or databases, please refer to the CTC Archive Data Catalog. For specific TRACS information, use TRACS to perform searches or refer to the TRACS Catalog.

## **V. PRIORITIES OF WORK, FY 94**

In order to optimize the time and Archive human resources available while accomplishing customer requirements we have developed a list of priorities for the Archive. The priorities of work for the period Jan - April 94 include:

- Support NTC Rotation 94-07 and baseline NTC Rotations 94-05, 94-06 and 94-08
- Start processing data from rotations 94-01 and 94-02 for all CTCs
- Develop a comprehensive Work Plan for Delivery Order 23 (Archive)
- Ensure that all database building and data entry deliverables are accomplished
- Develop a detailed outline for the Archive Standing Operating Procedures (SOP) Guide
- Reorganize the physical layouts of the Active and Inactive Archive Facilities
- Modify BDA Database to accommodate the new NTC format ( effective with rotation 94-04)
- Incorporate the new THP Viewer and Battle Replay Tool into the Archive in time to support NTC Rotation 94-07 and the next workshop (April 94)
- Initiate the conversion of TRACS (ACS)
- Modify the Graphics Database (automate the updating of the index file)
- Develop a plan to process the data from Peace Keeping Operations (PKO) and Operations Other Than War (OOTW) that are conducted at CMTC and JRTC

## **VI. AREAS OF CONCERN**

The CTC Archive provides an invaluable resource for military analysts to systematically identify,

prioritize and resolve Army warfighting issues. The wealth of material in the CTC Archive allows Subject Matter Experts (SMEs) to research CTC warfighting to help define the scope of issues, and, more importantly, to help develop solutions for the issues. However, several Archive related areas of concern currently exist that may have pronounced effects upon the Archive and reduce its effectiveness as a resource for CTC data analysis. This section identifies several areas of concern within the Archive and describes the potential impact of these concerns upon Archive capabilities.

**Area of Concern:** The CTC Archive has not received After Action Review Videocassettes from the JRTC in over a year. The last rotation that we received videocassettes for was 93-03. We have notified the CALL representative at the JRTC, SFC Blue-Fox, about this shortcoming.

**Comments:** The AAR videocassettes contain invaluable SME assessment feedback to the members of player units from the platoon level through brigade covering all BOS related activities. The AAR data source enhances the military analyst's ability to better interpret statistical data from battles and OC written comments contained in the THP. The lack of comments from the AAR tapes reduces the researcher's ability to set an accurate context for battle decisions, actions and results of JRTC operations.

**Area of Concern:** CMTC does not send communications tapes to the CTC Archive.

**Comments:** In response to an inquiry from the Commander, CALL-LVN at an IPR on 20 October 1993, ARI reopened the issue of archiving commo tapes from CMTC, and explored alternatives for accomplishing same. While CALL/OD expressed a willingness to provide copies of the tapes for the Archive, discussions revealed a number of factors bearing directly on the feasibility of accomplishment as well as the payoff of this:

- first, there would be problems in duplicating the tapes: CALL/OD does not have the capabilities to duplicate the tapes, though the Vipers do; the Vipers, pressed to process the 500-600 commo tapes per rotation, could not duplicate them during or right after the rotation, but may be able to provide them some thirty or sixty days later;
- second, the process will be expensive, since the tapes themselves cost in the neighborhood of \$9.00 each, and there may be a labor charge on top of that for providing a service unspecified in the support contract;
- third, until the Archive receives its CMTC Home Station Work Station (HSWS), the tapes, which are recorded digitally on VHS cassettes, will be useless because they can be played only on the HSWS, and according to CALL/OD, their contents cannot be transposed to audio tapes for playback on conventional audio tape machines;
- fourth, many of the tapes are blank, or have little traffic on them, since the tapes are

run for 24 hours continuously during the conduct of the exercise.

Acknowledging that a materials-only cost of \$4,500 - \$5,400 per rotation for commo tapes, many of which are of limited, if any, value, is excessive, ARI and CALL/OD agreed to explore possibilities for identifying which tapes in particular (identified by net and scenario phase) might offer sufficient payoff to warrant selective archiving. CALL/OD agreed to FAX ARI a list of nets that are monitored/recorded. ARI will explore with CALL-LVN which nets to retain in the Archive.

**Area of Concern:** The NTC has occasionally failed to notify ARI-PM about format revisions and version updates to the NTC instrumented data.

**Comments:** This is an issue that will require contract modifications. Pat Whitmarsh, ARI, and Mike Korandovitch, the COR at NTC, are working on this issue. CTIES and STRICOM are involved in this issue. ARI-PM must receive the data format changes and version updates in order to keep the database loading software current. The mission databases and battle replays cannot be properly maintained without current database loading software.

**Area of Concern:** The CMTC does not send instrumented data or digital THP data files to the CTC Archive and the JRTC does not send instrumented data to the Archive.

**Comments:** During FY 94 CMTC and JRTC will start sending instrumented data to the CTC Archive for processing. In order for ARI-PM to be able to process the automated data that will be collected at CMTC and JRTC it is imperative that the data be sent with adequate documentation detailing the contents and format of the data streams. Once the data and documentation are received, software will be developed at ARI-PM that will make the data available to analysts in a relational database format. The Archive currently holds only the hard copy versions of THPs from the CMTC. This situation prevents the automated review of THPs from the CMTC and eliminates a researchers ability to access remotely battle statistics and OC mission feedback data that are contained in the THPs.

**Area of Concern:** The CMTC and the JRTC have not sent graphical and ancillary paper data to the CTC Archive since 93-02 and 93-04 respectively.

**Comments:** The lack of battle graphics and orders inhibits a researcher's ability to establish a meaningful battle context to support valid analysis of decisions, actions and results. The CALL/OD from the CMTC reported to Archivist and Archive Task Leader that they were unaware that the Archive needed OPORDs, FRAGOs, Warning Orders, Overlays, and T&EOs. The CALL/OD will direct the appropriate data sources at the CMTC to provide the CTC Archive with copies of these documents for each rotation. The Archive will not receive the data materials from past rotations, but will begin to receive these data materials again starting in Dec 93 or Jan 94. SFC Blue-Fox, the CALL representative at JRTC, is attempting to forward to the Archive the missing graphics and orders, if available, from past rotations at the JRTC. He will ensure

that this data requirement will be met for future rotations. The types of data that are to be scanned into the graphics database for all CTCs will include: the Task Force Operations Orders, the Task Force Execution Matrices, and the Task Force Operations Overlays.

**Area of Concern:** A large backlog of Mission Critical Events (MCE) data exists across all CTCs. An automated tool to view the Mission Critical Events is currently being developed and will be incorporated into the Archive during FY 94.

**Comments:** The backlog of MCE data exists because of the low priority assigned to the MCE database during the last contract year. In order to obtain the MCE data for a given mission, data entry personnel and military Subject Matter Experts (SMEs) must perform an extensive search of the THP, AAR and unit operations orders. The human resources cost of such an effort was beyond the capability of the Archive staff during the last contract year. The integration of the automated tool to create and view MCE data will require extensive coordination and documentation in order to become a viable database within the Archive.

**Area of Concern:** The procedure for updating the MTP Database requires the assistance of personnel that are not assigned directly to the Archive staff. Rotation 93-04 was the last one entered into MTP database.

**Comments:** In order to maintain the MTP Database properly the Archive staff must become self-sufficient in terms of loading this database.

**Area of Concern:** The NTC has modified the format that will be used to report BDA data to the CTC Archive effective with rotation 94-04.

**Comments:** Modifications to the existing BDA Database structure at ARI-PM will be necessary to accommodate the new NTC format. The entire listing of weapons and targets should be reviewed when the new NTC format is incorporated into the BDA Database.

**Area of Concern:** Rotations 93-06 to 94-02 at the CMTC involved Peace Keeping Operations (PKO) and Operations Other Than War (OOTW) with data elements that differ significantly from warfighting data. As an example, the BDA categories contained in the PKO data sources do not exist in the current BDA Database at ARI-PM. The JRTC is starting to conduct PKOs and OOTWs.

**Comments:** The Archive staff has not entered any digital PKO data or OOTW data into the CTC Archive databases to date because of the unique nature of PKO and OOTW exercises. In addition, some of the data derived from PKO and OOTW exercises is not compatible with the structure of the existing CTC Archive databases that were developed to accommodate warfighting data. The processing of digital PKO and OOTW data is a priority issue for FY 94 and it must be resolved as soon as possible. The contractor will discuss with ARI the possible options for processing PKO and OOTW data.

**Area of Concern:** The CTC Archive contains training data in the form of paper, acetate graphic overlays, magnetic voice recordings and computer digital data that are available to local and remote analysts. Personal computers are utilized to access the available digital data over the Ethernet Local Area Network (LAN). As increasing amounts of paper, graphics and computer digital data are stored and made accessible via the LAN, the available storage medium, hard disk drive, becomes less.

**Comments:** Currently, the contractor is tasked with converting the present ARI application LAN from 3COM to Novell operating system software. To facilitate better Archive data access to LAN and remote users, it has been requested that data stored on the UNIX and VMS computer systems be converted and placed on the Novell LAN. In order to convert and provide better data access single type of LAN it will be necessary to provide increased storage space in the form of CD-ROM or large hard disk drives of the servers.

**Area of Concern:** Several important software updates, modifications and conversions will be accomplished early in 1994. The software systems affected by these changes include: the Automated Catalog System, the Graphics Database, the Battle Replay Tool and the Automated THP Viewer.

**Comments:** These software changes are necessary because of the implementation of the Novell Network and the Archive requirement to support NTC rotation 94-07.